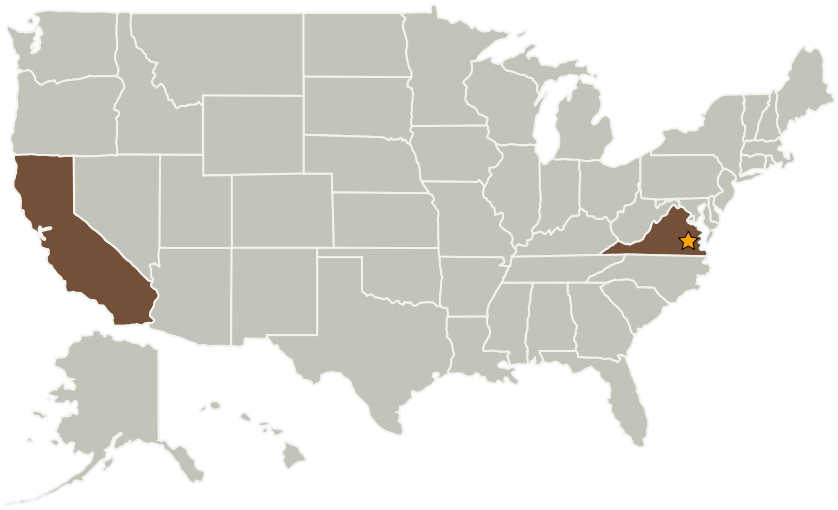
Three-Dimensional Cockpit Display System for Improved Situational Awareness, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

Physical Optics Corporation (POC) proposes to develop a 3D cockpit display (3D-COD) system for improved pilot situational awareness and safety in 3D airspace by overcoming the inherent limitations of 2D information presentation. The proposed display will be automultiscopic and will be based on a projector, a stationary holographic optical element screen integrated with a high-speed electro-optical scanner and high-speed electronics with a software interface to NASA systems. This minimum 8-in. diagonal drop-down head-up display with no moving parts will present six or more perspective views to air crew members, forming integrated virtual volumetric 3D images viewable over a 60 degree horizontal field of view. In Phase I POC designed a laboratory prototype and successfully demonstrated the feasibility of the proposed system by assembling a single-user monochrome 3D-COD prototype. In Phase II POC will further develop the true 3D display technology and construct a fully functional system that will project distortion-free, 400-600 lumen, full-color, virtual volumetric 3D images at a 30-60 Hz video rate for real-time user interaction with the images, each from his or her own perspective.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems